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ABSTRACT

Focusing on spelling as an integral part of the writing process, this annotated bibliography addresses the problem of developing individualized, focused, and relevant methods for teaching spelling to elementary students. The annotations are organized around two specific questions: What strategies do children use to spell words and what instructional approaches do these tactics suggest? and, What are the teaching strategies and characteristics of an effective spelling program? Among the findings summarized with regard to the first question is the observation that children use both phonemic principles and visual memory of whole words to judge the correctness of their spelling. The studies reviewed also indicated that teachers use error pattern analysis to diagnose individual patterns and create instructional approaches based on phoneme-grapheme correspondence and sequential development. Among the findings summarized with regard to the second question are that much of the content of elementary instruction is unjustly based on commercial spelling textbooks, and that spelling instruction programs should be expanded by teaching skills in problem solving, self-correction, spelling patterns, proofreading, and dictionary usage. A glossary of relevant terms is included. (Thirty-seven citations are provided in the concluding bibliography.) (JD)

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AN ANNOTATED BIBLIOGRAPHY OF THE LITERATURE DEALING WITH THE METHODS OF TEACHING SPELLING IN THE ELEMENTARY SCHOOL

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INTRODUCTION

Spelling ability is a valued characteristic of educated people. Faulty spelling inhibits writers, confuses and infuriates readers, and holds the guilty party accountable. It is as important to instill a spelling conscience among our students as it is to give them the chance to communicate freely. Spelling is not a discrete skill, but an integral part of the writing process and interrelated to all other language arts.

Spelling is a skill that requires simultaneous auditory and visual discrimination, memory sequentialization, analysis and synthesis, and integration. The following questions are then asked: 1) What makes a good spelling program? 2) Should we focus on the idea that spelling is a problem-solving task and concentrate on the errors children make? 3) Should children be taught spelling rules or is the language too irregular for such an approach? 4) Should children learn words as unique items and forget about rules, or, given the fact that the average adult knows between 50,000 and 100,000 words, does the sight word approach place too much burden on the learner? (Schacter 1979:805)

The following passage illustrates the problems we face with English orthography:

Hints on Pronunciation for Foreigners

I take it you already know
Of tough and bough and cough and dough?
Others may stumble but not you,
On hiccough, thorough, laugh and through.
Well done! And now you wish, perhaps,
To learn of less familiar traps?

Beware of heard, a dreadful word
That looks like beard and sounds like bird,
And dead: it's said like bed, not bead--
For goodness' sake don't call it "deed"!
Watch out for meat and great and threat
(They rhyme with suite and straight and debt.)

A moth is not a moth in mother
Nor both in bother, broth in brother,
And here is not a match for there
Nor dear and fear for bear and pear,
And then there's does and rose and lose--
Just look them up--and goose and choose,
And cork and work and card and ward,
And font and front and word and sword,
And do and go and thwart and cart--
Come, come, I've hardly made a start!
A dreadful language? Man alive.
I'd mastered it when I was five.

T.S.W.

(Chonsky 1970:311)

STATEMENT OF THE PROBLEM

The current cry of "back to the basics" along with the demand that high school seniors must pass a competency test before receiving a diploma has increased the need for better methods to teach spelling. (Ungaro 1982:400) Teachers have learned that students cannot spell the same words they use in their speech. They have learned that the methods of learning rules, oral drill, spelling lists, rewards, and punishments have not worked. Parents and teachers

have recognized that learning to spell goes beyond phonics and is not a rote memorization process. (Beer 1981:579) The problem is developing methods of instruction for teaching elementary students spelling which are individualized, focused on the types of errors made, and relevant.

PURPOSE OF THE STUDY

The elementary teacher is responsible for helping all of the students in his/her classroom to learn spelling skills that will not only enable them to master their spelling lessons, but also aid them to effectively write in other subject areas. This includes identifying different kinds of spelling errors, recognizing stages of spelling development and using different approaches to instruction. The importance of the relationship between writing, word study, and learning to spell needs to be emphasized. The purpose of this study is to explore different teaching techniques and instructional methods which will enable the elementary teacher to obtain these goals in teaching spelling.

ORGANIZATION OF THE STUDY

This work will address the problem of teaching spelling in the elementary classroom by exploring answers to the following questions: (1) What are the different strategies and patterns children use to spell words and how do they suggest different

spelling approaches to instruction? (2) What are the teaching strategies and characteristics of an effective spelling program?

The first question will include literature pertaining to the following topics: (1) error analysis and instruction, (2) phoneme - grapheme approach, (3) sequential developmental strategies, and (4) children's perceptions of their spelling.

The main emphasis for this study will be on the teaching strategies and characteristics of an effective spelling program. As many varied and significant investigations of this topic as feasible will be reviewed.

LIMITATION OF THE STUDY

Spelling instruction in the United States has been subject to many changes throughout the history of education. Studies concerning philosophies and techniques can be found as far back as 1660 (Towery 1979:22) and have since been extensive. Time limitation prohibited the examination of all the relevant data. While further study would expand upon the concepts presented in this paper, it is believed that the literature reviewed represents a broad overview of the current research findings.

GLOSSARY

grapheme -- "a letter symbol which stands for a speech sound." (Good 1973:266)

lexical meaning -- "the meaning in a language that is expressed by words rather than by means of structure, function words, or intonation." (Good 1973:356)

linguistics -- "the study of the nature and use of language." (Good 1973:341)

mnemonic device -- "any artificial device, such as a familiar or striking formation of words, an acronym, a jingle, etc., to aid the learner in retaining memorized information." (Good 1973:370)

morpheme -- "a basic, indivisible language unit which carries meaning in a language." (Good 1973:374)

orthography -- "spelling according to standard usage; the study of spelling." (Good 1973:404)

phoneme -- "1) a single speech sound; 2) a group of slightly varying forms of what is generally considered to be one speech sound but that vary according to stress, rate of articulation, adjacent sounds, etc." (Good 1973:420)

semantic approach -- "a method of teaching correct usage in language utilizing the psychology of meaning rather than formal grammar." (Good 1973:526)

semantics -- "the logical anaylsis of language." (Good 1973:526)

spelling conscience -- "sensitivity to correctness in spelling and pride in ability to spell correctly." (Good 1973:550)

spelling demon -- "any word that is commonly and persistently misspelled by a large percentage of persons." (Good 1973:550)

spelling, phonemic -- "system of spelling words according to their sounds using a phonemic alphabet." (Good 1973:551)

syntax -- "the area of grammatical study dealing with sentence structure and word relations as established by usage." (Good 1973:579)

ANNOTATIONS

CHILDREN'S SPELLING STRATEGIES AND PATTERNS

ERROR ANALYSIS AND INSTRUCTION

Ganschaw, Leonore, "Analyze Error Patterns to Remediate Severe Spelling Difficulties," Reading Teacher 38.3:288-93, December 1984.

Ganschaw felt the two reasons teachers should observe systematically the performance of poor spellers were to gain insights into student's hypothesis about the writing system and to help diagnose individual patterns of strengths and weaknesses. Ganschaw charted at least 25 misspelled words from each child's weekly lists and writings. The chart had four columns: (1) the misspelled words, (2) the correctly spelled word, (3) types of errors made, (4) proposed remediation. Teachers were recommended to devise their own system to classify errors but most used phonetic/nonphonetic distinctions. Remediation was individualized by the number of errors, most generalized pattern of errors, and ease of correction of error.

Ganschaw, Leonore, "Discovering Children's Learning Strategies for Spelling Through Error Pattern Analysis," The Reading Teacher 34.6:676-80, March 1981.

Ganschaw believed that evaluation of spelling errors children make can guide teachers in formulating teaching strategies for spelling. Ganschaw made and explained six important assumptions about error pattern analysis: "(1) Errors children make are not random; they stem from children's hypotheses about the rules governing a particular task. (2) Some errors are more productive than others. (3) A systematic collection of errors children make on a specific task provides diagnostic information about a child's 'rule' for that task. (4) Given sufficient samples of a child's work, teachers can simulate a child's rule system. (5) Children may provide important cues to their strategies for a particular task. (6) Knowing a child's strategies will help teacher's plan instruction." (p.676)

Lydiatt, Steve, "Error Detection and Correction in Spelling," Academic Therapy 20.1:33-40, September 1984.

Lydiatt researched the ability of students to detect and correct their own errors. He felt this to be as important as other spelling skills mastered by students. Error detection represented a set of behaviors spellers used internally to review and monitor ongoing processes while spelling words. Correction referred to attempts to alter the spelling word with the intention of improving the original response. Lydiatt felt systematic approaches to uncover strategies students use suggested appropriate effective teaching strategies for spelling. He suggested error detection and correction may need to be examined separately and taught as independent skills.

Marino, Jacqueline L., "Spelling Errors: From Analysis to Instruction," Language Arts 58.5:567-72, May 1981.

Marino stated "The purpose of this paper is to present some examples of error (spelling) patterns, to discuss them in the light of current spelling theory, and to suggest some possibilities for differentiated instruction." (p.567)

These are the patterns he discussed:

Pattern A: Beginning spellers employ a logical, systematic, though naive, spelling scheme. Instruction: encourage exploration through writing.

Pattern B: Problems with irregular, high-frequency words. Instruction: word tests, daily practice with partners, pre- and post-tests, flash cards, scratch time.

Pattern C: Lack of knowledge of basic spelling generalizations or rules. Instruction: group words, stress application, student infer rule.

Pattern D: Awareness of constraints associated with orthography. Instruction: focus on writing-system classifications, word games, letter patterns, and predictive skills.

Pattern E: Morphonemic nature of spelling. Instruction: study of root words.

Pattern F: Need for application of personal spelling aids or spelling conscience. Instruction: Mnemonic devices, positive experiences in writing, proof-reading.

PHONEME - GRAPHEME APPROACH

Chomsky, Carol, "Reading, Writing, and Phonology," in Language and the Language Arts, edited by Johanna DeStefano and Sharon Fox, Boston: Little, Brown and Co., 1974.

Chomsky disputed the commonly held belief that English orthography is inconsistent and irregular, based on the observation that it is frequently not phonetic and lacking in grapheme-phoneme correspondence. She suggested that much of the regularity exists below the level of actual sounds and is expressed in the orthographic system. The lexical spelling, not the phonetic spelling, revealed the similarity and consistency of orthography. Good spellers recognized that related words (ex: democratic, democracy) are spelled alike even though they are pronounced differently. Chomsky provided suggestions for spelling exercises that taught students to be aware of these regularities and use this systematic nature of the spelling system.

Groff, Patrick, "Phonics for Spelling," The Elementary School Journal 79.5:269-75, May 1979.

Groff reviewed the research concerning the appropriateness of phonics instruction. She stated that phonics has much greater potentiality for word-recognition than for spelling mastery, but the degree to which phonics positively affects spelling remained to her a question. She suggested that children be taught systematic phonics for spelling purposes while being stimulated to develop eccentric strategies that prove personally useful.

The researchers objecting to phonics believed: (1) spelling is best learned incidentally as children read and write, (2) spelling of English is not predictable enough to make the application of phonics rules useful, (3) empirical research finds that teaching phonics leads to no greater gains then nonphonics approaches. Supporters of phonics offered convincing research to counter these objections. Groff suggested that the amount of phonics taught in a spelling program depends on a calculated choice.

Hanna, Paul and Jean Hanna, "The Teaching of Spelling," in Language and the Language Arts, edited by Johanna DeStefano and Sharon Fox, Boston: Little, Brown and Co., 1974.

The Hannas wrote that spelling is a word analysis process of encoding, selecting appropriate letters to represent the sounds in a word and writing these letters in the order they are articulated. They contended that in American English there is not a perfect one-to-one phoneme-grapheme correspondence, but that there are many consistent spelling patterns. They recommended that building a spelling power depends largely upon a rational examination of all elements of a phonological analysis of words, a generalization about the effects that position, stress, and constraint have on choices of graphemes, and an understanding of the influence of morphology. The student should be taught to correctly pronounce a word and then transfer it to correct phoneme-grapheme correspondence using these procedures. Frequent writing in language situations, not isolated repetitive writing, was recommended.

SEQUENTIAL DEVELOPMENTAL STRATEGIES

Beers, James W., Carol S. Beers, and Karen Grant, "The Logic Behind Children's Spelling," The Elementary School Journal 77:238-42, January 1977.

This article drew its results from several studies conducted over the past five years. The studies concluded that children develop in their ability to manipulate words according to their overall development and exposure to words. Recurring errors need to be analyzed to understand the logic children use in their spelling as children seldom make random errors in spelling. The research suggested that word-attack principles are not understood by the spellers. Children were found to learn to spell by exploring words in their reading and writing and consequently evolving systematic strategies.

Beers, James W. and Edmund H. Henderson, "The Study of Developing Orthographic Concepts Among First Graders," Research In the Teaching of English 11.2:133-48, Fall 1977.

These researchers' objective was to identify spelling error types as they occurred in the creative writing of first graders and to observe them for six-months to determine whether progressive patterns occurred from which rules might be inferred. Spelling pattern sequences suggested that children's knowledge of English spelling was not based solely on simple letter-sound correspondencies but a combination of phonological and syntactic information as it applied to spoken and written language. As the children progressed they became more and more aware of the relationship between syntactic, phonemic, and morphaphonemic constraints. The children appeared to construct a hierarchy of strategies. In the beginning their spelling relied on awareness of speech sounds. As they were more exposed to written language, they employed lexical or syntactic information when they spelled in sentence form.

Gentry, J. Richard, "Early Spelling Strategies," The Elementary School Journal 79.2:88-89, November 1978.

Gentry's research found that children at different levels of reading achievement used different spelling strategies. The children were found to use inventing when they first began to spell. Through exposure and increased opportunities to compare their spellings with standard English, they formulated conceptualization of orthography. The competent speller used a complex, abstract orthographic system which did not stem from rote learning or memorization of spelling lists. Gentry felt a teacher could classify a student's spelling strategies, beginning at the upper end of the classification, and therefore individualize instruction. These were Gentry's classifications: (1) correct strategy (spelling), (2) transitional strategy (spelling incorrect, though phonetically acceptable, or two letters reversed) (3) phonetic strategy (spelling based on sound elements, not acceptable letter sequence), (4) prephonic strategy (a phonic feature is not represented), (5) deviant strategy (random spelling).

Nolen, Patricia and Rosemarie McCartin, "Spelling Strategies on the Wide Range Achievement Test," The Reading Teacher 38.2:148-57, November 1984.

Nolen and McCartin alleged that teachers and researchers have different perspectives when looking at spelling competency. Teachers use norm-referenced measures such as the Wide Range Achievement Test and researchers use strategy-reference and cognitive-development interpretations. This research sought to apply strategy-referenced interpretations to norm-referenced misspellings so as to suggest ways of varying methods of teaching spelling. Early spelling strategies were found to be primarily phonic, yielding quickly to the influence of printed patterns, and gradually to the visualization of known words. The beginning student was recommended to be taught the importance of "correct" spelling and demonstrated the limits of sound generalizations. The more advanced student was taught problem-solving with self-monitoring and checking tasks using reinforcement with a variant of negative practice.

Zutell, Jerry, "Spelling Strategies of Primary School Children and Their Relationship to Piaget's Concept of Decentration," Research in the Teaching of English 13.1:69-80, February 1979.

Zutell researched whether there was indeed a correlation between children's progressive sequential spelling attempts and Piaget's general theory of cognitive development. The results of his research supported the correlations hypothesized: (1) as the grade level increased, more sophisticated spelling strategies were used; (2) differences in categories lead to differences in performance; (3) children combined and used varying strategies depending upon both the grade level and the particular category involved. These conclusions and implications stressed that the development of spelling proficiency needs to involve both cognitive and linguistic processes, and requires the active, exploring participation of the learner. Teachers should acquire instructional information regarding stages of development, sources, of difficulty, signs of progress, and the quality of children's spelling attempts, and to encourage and provide opportunity for them to discover for themselves the structures governing English spelling.

CHILDREN'S PERCEPTIONS OF THEIR SPELLING

Dawning, John, Johanna DeStefano, Gene Rich, and Aula Bell, "Children's Views of Spelling, "The Elementary School Journal 85.2:184-98, November 1984.

This study explored individually school children's general cognitive and affective development in the area of spelling. The research questions came from children's free responses rather than from adult preconceptions and were of three types: cognitive, affective, and developmental. Most children gave their reason for judging correctness of spelling as "sounding out." Yet, their actual judgments seemed more likely to have been based on visual memory of whole words and spelling patterns. Children believed that spelling laws are handed down by "some" authority and can not evolve creatively. They rapidly developed awareness images of themselves and others as "good" or "poor" spellers with this being mainly derived from feedback from spelling tests. Spelling was recognized as an important, but not popular subject.

Radebaugh, Muriel R., "Children's Perceptions of their Spelling Strategies, "The Reading Teacher 38.6:532-36, February 1985.

Radebaugh individually interviewed third and fourth grade students as to their strategies to produce English spellings. Both the "good" and the "bad" spellers were able to provide information about their personal strategies. Neither used phonetic spelling which occurs frequently in our spelling instruction and textbooks. Poor spellers tended to sound out words letter by letter, or by dividing longer words into parts and then proceeding sound-by-sound. Good spellers indicated a much larger number of spelling strategies and were more likely to break longer words into parts and then apply common English spelling patterns, frequently using visual imagery.

TEACHING STRATEGIES AND CHARACTERISTICS OF EFFECTIVE SPELLING PROGRAMS

Beers, Carol and James, "Three Assumptions about Learning to Spell," Language Arts 58.5:573-80, May 1981

This article examined three assumptions that have greatly influenced elementary spelling instruction. The authors felt that research questions the validity of these assumptions.

First assumption: Learning to spell is based primarily on a child's knowledge of phonics. Beers felt that primary grade students are hearing the phonetic features of English sounds and not phonics when they spell.

Second assumption: Learning to spell is primarily a rote memorization process. Beers questioned the practice of word-list memorization by citing studies that conclude that children's ability to spell follows a sequence of developmental states.

Third assumption: Children should not write if they cannot spell words correctly. Contrary to this Beers felt that spelling instruction should be directly linked with writing.

Cronnell, Bruce, and Ann Humes,"Elementary Spelling: What's Really Taught, "The Elementary School Journal 81.1:59-64, September 1980.

This research was done to study elementary school spelling textbooks. The theory promoting this research was that the content of most elementary school instruction is based on the content of the textbooks. Textbooks varied in their content and sequencing of skills. High-frequency spellings were included in all the series; low-frequency spellings varied in their presence, as well as grade level of introduction. Most textbooks were found to have a considerable amount of review and reteaching as well as repetition of content year after year. Word lists were often not presented sequentially with phonics generalizations and spelling rules they demonstrated. Practice of the instruction received varied considerably and often the relevance of the spelling practice as questionable. Most often the task required was "copying" rather than "self-generated spelling" with realistic spelling tasks performed rarely.

Delquadri, Joseph C., Charles R. Greenwood, Kathleen Stretton, and R. Vance Hall, "The Peer Tutoring Spelling Game," Education and Treatment of Children 6.3:225-37, Summer 1983.

The Peer Tutoring Spelling Game was part of a research project conducted with a third grade classroom. The game was designed to improve spelling accuracy on weekly tests by increasing the opportunities for students to actively respond during instruction. Several procedures were used: social and token reinforcement, team competition, distributed practice, error correction, and peer tutoring. After the program was implemented, spelling performances were improved on the weekly Friday spelling tests and both the teacher and students showed enthusiasm for the game. Advantages of using the game included its law cost, ease of administration, rapid and efficient method for correcting errors, and its production of increased opportunities to practice spelling without increasing the total time set aside for the subject.

DiStefano, Philip, and Patricia Hagerty, "An Analysis of High-Frequency Words Found in Commercial Spelling Series and Misspelled in Students' Writing, "Journal of Educational Research 76.3:181-85, January/February 1983.

This study began by stating that research has found that two of the major components of a good spelling program are: (1) a list of high-frequency words and (2) efficient teaching procedures for the words and an efficient learning method for the students. This study sought to determine whether a number of current (1976 or later) commercially prepared spelling series used high-frequency words for their lists and whether students misspelled high-frequency words in their writing. The conclusion of the research showed that the series studied were not consistent across grade levels, or within grade levels in the number of high-frequency words found. There was also a difference between the number of misspelled words. These findings determined that it was not advisable to use commercial spelling series as a source of spelling word lists. Teachers should devise individualized lists from students' writings or frequency lists.

Doggett, Marian, "The Pocket Dictionary: A Textbook for Spelling," English Journal 71.3:47-50, March 1982.

Project Pocket Dictionary was started by Doggett to be used with over one thousand students. There were ten objectives: "improving students' basic spelling skills; promoting the habit of students using the dictionary on a daily basis; increasing staff awareness in all content areas of their need to help students improve spelling and vocabulary; expanding students' written and oral vocabulary; providing a system for students to use in improving their spelling and vocabulary; encouraging correct use of words; increasing parental support of students' spelling and vocabulary improvements; encouraging a positive attitude on the part of students toward the dictionary and how it could help them improve their communication skills; providing teachers with a worthwhile change-of-pace activity; and helping students see that learning is fun." (p.48) All students were issued a pocket dictionary. A very positive attitude toward dictionary usage was developed by the staff and students.

Ganschaw, Leonore, "Teaching Strategies for Spelling Success," Academic Therapy 19.2:185-93, November 1983.

This article explained several research findings and valuable hints for helping poor spellers: "(1) Teachers need to allow children to test their hypotheses about the writing system through ongoing practice. (2) Teachers can use error pattern analysis to diagnose spelling problems and plan remediation strategies. (3) Teachers can make qualitative judgments about misspellings if they understand that spelling accuracy develops in stages. (4) For dysphonetic spellers, teachers may need to focus on breaking down words into component sounds. (5) Teachers may need to assist children in looking at morphological, syntactical, and derivational aspects of words. (6) Teachers can highlight spelling regularities through spelling patterning. (7) In spelling instruction teachers can show children how to model adult spelling through self-correction." (p.192)

Geedy, Patricia S., "What Research Tells us About Spelling," Elementary English 52:233-36, February 1975.

This research indicated that 15 to 20 minutes daily should be devoted to the direct teaching of spelling. One study emphasized the coordination of teaching reading and spelling and that phonics and word analysis skills need to be taught in spelling. It was proven to be more efficient to study words from word lists rather than in context. The criterion for word selection was based on frequency of use, permanency, utility of the writing vocabularies, and children's present needs in writing. The more meaning a word had for a child, the more easily he/she learned to spell it. Teachers were urged to create situations where children need to know how to spell. One study pointed out that the crossing and integrating of visual, auditory, and kinesthetic modalities are needed before spelling of a word becomes a subconscious automatic process.

Gentry, J. Richard, "Developmental Aspects of Learning to Spell," Academic Therapy 20.1:11-19, September 1984.

Gentry believed that children need opportunities to observe and use print in the form of many varied unstructured opportunities in order for them to develop a spelling consciousness. He listed the following instructional activities, accompanied by a brief rationale, that are supported by developmental spelling research: (1) do not confine spelling to formal instruction, (2) induce children to write so they may hypothesize about and invent orthographic knowledge, (3) encourage invented spellings and phonemic segmentation, (4) make allowances for inexperience with print and encourage expression and content over mechanics, (5) provide language experiences and word study with opportunities to observe, verify, and correct spelling mistakes.

Graham, Steve, "Effective Spelling Instruction," The Elementary School Journal 83.5:560-69, May 1983.

Graham felt that unsatisfactory spelling progress may be attributed to: (1) inadequate commercial spelling texts, (2) unindividualized instruction, (3) procedures based on traditional practices rather than research results. Graham stated that since spelling is a multifaceted process, students should be exposed to a balanced curriculum of spelling vocabulary, phonemic skills, and continued language arts development. The minimum guidelines proposed were individualized comprehensive instruction based on the following research supported considerations:
(1) test-study-test method is superior to study-test, (2) students should use the corrected-test method, (3) students should be taught an efficient, systematic study technique for new words, (4) word lists are more efficient than context presentation, (5) whole word presentation is superior to syllabified form, (6) spelling games are good interest motivators, (7) 60-75 minutes per week spelling instruction is advisable.

Groff, Patrick, "Word Frequency and Spelling Difficulty," The Elementary School Journal 83.2:125-30, November 1982

Groff conducted research designed to explore the proposition that low frequency monosyllabic words are more difficult to spell than high-frequency monosyllabic words that have the same vowel phoneme-grapheme spelling pattern. This research was conducted to question the validity of the common practice of using word frequency as a major criterion for words' grade placement in spelling programs. The research findings did not support this practice. Groff found that the relationship between the frequency of words in children's usage and the spelling difficulty of these words is of little significance in deciding when to teach a spelling word. Instead Groff recommended assigning words to successive levels of spelling instruction on the basis of the relative predictability of their spelling based on phoneme-grapheme and morphologic knowledge.

Hillerich, Robert L., "Let's Teach Spelling - Not Phonetic Misspelling," Language Arts 54.3:301-7, March 1977.

Hillerich defended through research his belief that the phonetics system of teaching spelling that is presented in commercial spelling programs does not assure correct spelling. He recommended the research approach: supply student with a good word list developed through a pretest with immediate correction by the child, followed by instruction on the study method, and including a record of student progress. Word lists should be arranged so they are equal in difficulty for every grade level, taken from both children's and adults' writings, and not grouped according to spelling. Since spelling instruction should only involve one hour per week, additional time should be spent developing a spelling conscience, dictionary usage, and much writing. Correct spelling is a courtesy and writing should emphasize the communication of ideas with children encouraged to write often and receiving no correction on their paper.

Johnson, Terry D., Kenneth G. Langfor, Kerry C. Quorn, "Characteristics of an Effective Spelling Program," Language Arts 58.5:581-87, May 1981.

This article discussed the implications of the following seven factors associated with learning to spell: (1) Words presented in list form are learned more effectively than words presented in meaningful context (holistic approach). (2) Spelling lists should comprise words that children ask for, show a need for, and are based on the current interest, area of study, or class project. (3) Children should develop or be provided with a system for learning spelling. This should include self-correction by the learner. (4) Words should be treated as whole units rather than broken into smaller parts (chaining hypothesis). There is little value in syllabication, writing words in the air, spelling orally, and writing words repeatedly. (5) Do not teach phonic generalizations. Do teach common spelling patterns as they occur. (6) Test-study method is superior to the study-test method. (7) Spelling instruction each week should include between sixty and seventy-five minutes.

Kamii, Constance, and Marie Randazzo, "Social Interaction and Invented Spelling," Language Arts 62.2:124-33, February 1985.

The basic philosophy of invented spelling presented by Kamii and Randazzo was that children's errors are part of their effort to build a coherent system of writing, and that the errors should be progressively corrected by children themselves. Therefore, the child was allowed to "construct" spellings of words from within by self-evaluation and a need for coherence with conventionally accepted models. A research project was devised in which children used invented spelling, requested ideas from a peer concerning the correct spelling, evaluated these ideas, and came to a conclusion based upon their own critical thinking. Communication, persuasion, and rethinking became more important than "correct" answers. This lead to an increased interest in writing.

Ley, Terry C., "Teaching Spelling Without Spelling Books," English Journal 71.8:22-25, December 1982.

Ley felt that learning to spell is developmental and requires nurturing. He developed a year-long program to help students learn how to spell three kinds of words: (1) words whose spelling is governed by reliable phonic or structural variations, (2) high-frequency demon words that defy generalizations, and (3) words that students misspell on their own compositions. He used the principles of mastery learning with the goal of everyone reaching mastery of a series of sequential reasonable spelling tasks. An "A" was awarded to everyone who reached their goal. Students charted their own progress based on student self-corrected pretests.

Marino, Jacqueline L., "What Makes a Good Speller," Language Arts 57.2:173-177, February 1980.

An informal study was conducted using a spelling game "Word Mastermind" to answer the question: what makes a good speller? This game required the students to use the rules and constraints of orthography in a systematic manner therefore reflecting their efficiency in spelling. Good spellers were found to use prediction skills (problem solving strategies) more efficiently and had superior mastery of graphemic information as regards to sound-letter correspondence, letter frequency, pattern frequency, the effects of stress and environment, and probably and improbably letter patterns. Teaching procedures which encourage this predictive aspect of spelling were suggested. Students were encouraged to discover their own rules to learn to view English orthography as reasonable, consistent, and systematic.

Nicholson, Tom and Summer Schachter, "Spelling Skill and Teaching Practice - Putting Them Back Together Again," Language Arts 56.7:804-9, October 1979.

These researchers presented a model of spelling process which could be used as a teaching method or for diagnosis. Proficient spellers were found to use three kinds of knowledge, separately and most often together, when writing words: language knowledge, internalized rules, and visual associations. Language knowledge assisted children in spelling related words according to language structure and was developed from prior knowledge. Teaching methods would include teaching sound and language clues, as well as related word pairs. Internalized rules enabled children to predict the most probable spelling for words and was taught either inductively (by example) or deductively (by generalization). Visual association was used to develop automaticity by storing some words as unique items or as small associative sets of pattern words as a visual dictionary in a student's head. Teaching utilized mnemonics, probabilistic spelling, and proofreading.

Nolen, Patricia, "Sound Reasoning in Spelling," The Reading Teacher 33.5:538-43, February 1980.

Nolen discussed the advantages of using a spelling computer vs. teaching. She felt that computers are a valuable tool in the practice and drill of spelling by providing a fun visual word presentation. The danger was emphasized to be in the way spelling computers are used. They were stressed to be a practicing device, not teaching device. Students still needed spelling instruction in pattern analysis, spelling conscience, and error classification.

Olrich, Frank, "A "Whole Person" Spelling Class," Academic Therapy 19.1:73-78, September 1983.

Olrich researched his belief that a student learns more, faster, and retains longer when their whole person is involved in learning in a positive and enjoyable way. Students were given instructional opportunities to improve their spelling skills while enhancing their self-esteem and self-awareness. The whole person approach included the use of an introduction of the spelling words, mapping the words, picture-taking, relaxation, visualization, self awareness and spelling games, writing exercises, and final review. All students improved their spelling skills as shown by test scores at the end of the course. The whole person approach was expressed as enjoyable and valuable to the students with an increased reinforcement of self-esteem and self-awareness.

Scarrozzo, Margaret L., "Lets Dictate Spelling Success," Academic Therapy, 18.2:213-15, November 1982.

This article explained the use of sentence dictation to reinforce spelling and other written language skills. The teacher used sentences from other content areas which combined spelling words, reviewed words, and sight vocabulary. Two sentences were dictated daily into a special dictation notebook. Each sentence was dictated word by word, with pauses between words, and then the whole sentence was repeated. The sentences were immediately scored. The scoring was success oriented with one point given for each beginning capital letter, each correctly spelled word, and each proper ending punctuation mark. Only correct work was noted with no mention of errors in the scoring. Errors were dealt with on an individual basis.

Ungaro, Don, "Imagineering the Spelling Process," The Clearing House 55:400-5, May 1982.

Ungaro described a program labeled "imagineering" which had as its basic element the use of images for letters and words. He stated that research has found that images are the single most important factor determining free recall and that to learn anything new, you should associate it with something you already know. He also stated that we tend to remember the unusual and to forget the common and mundane. Finally he claimed that memory is based on reminders. Ungaro's program of imagineering used several steps: (1) hear the spelling word, its sounds and types of sounds, (2) associate the word with an image, (3) identify the trouble spots, (4) associate the trouble spots with a ridiculous, exaggerated mnemonic device, (5) use imagineering just before sleep.

Wood, Mango, "Invented Spelling," Language Arts 59.7:707-17, October 1982.

This research presented an overview of the literature on invented spelling. Wood designated invented spelling as: "Phonetic spelling of words representing their composite sounds as heard (and pronounced) by the child." (p.708) The beginning stages were found to be spontaneous and random and progress as children learn to read toward systematic, conscious reflection of word spelling. Wood discussed the concern of some educators that encouraging invented spelling might interfere with the learning of standard spelling. The most positive answer to this was that invented spelling is a problem solving process and this is held to be a valuable tool in language acquisition. There was found to be a proficient transition from invented to standard spelling. Invented spelling was most often used by pre-schoolers and teachers and parents were encouraged to stimulate children to learn the alphabet and write, to surround them with print, and to respond positively to their attempts.

SUMMARY

Spelling is a language arts skill that can be taught with expertise and positive results. A teacher must learn to recognize the spelling processes and developmental skills used by the student, teach more skillful learning methods, and evaluate the commercial spelling programs used in the classroom, and extend them to research based techniques.

Error pattern analysis was found to be an important element in determining children's spelling strategies. Ganschaw encouraged the systematic observation and analysis of children's spelling errors so as to individualize remediation by teachers. Lydiatt's research concluded that students have the ability, and can be further trained to detect and correct their own errors. Marino classified six error patterns and suggested differentiated instruction for each pattern.

The phoneme-grapheme approach used by spellers was given different emphasis by different researchers. Chomsky determined that good spellers recognize the similarity and consistency of orthography rather than basing their spelling on its inconsistent and irregular grapheme-phonemic correspondence. The Hannas contended that American English is not a perfect one-to-one phoneme-grapheme correspondence but that there are many consistent spelling patterns. They recommended a phonological

examination of words, a generalization about the effects that position, stress, and constraints have on choices of graphemes, and an understanding of the influence of morphology. Groff reviewed the research on phonics instruction and remained indecisive about the degree to which phonics positively affects spelling.

Research found that children progress sequentially depending on their development, in their ability to correctly spell. James and Carol Beers, and Grants' study concluded that children develop in their ability to manipulate words according to their overall development and word exposure. Beers and Henderson found children appeared to construct a hierarchy of strategies as they progressed in their knowledge of English spelling. Five sequential classifications of a student's spelling strategies were developed by Gentry for formulating individualized instruction. The research conducted by Nolen and McCartin applied strategy-referenced interpretations to norm-referenced misspellings so as to suggest sequential methods of teaching spelling. Zutell's research supported the correlation between children's progressive sequential spelling attempts and Piaget's general theory of cognitive development.

Children were found to be able to provide information about their personal spelling strategies. The study done by Dawning,

DiStefano, Rich, and Bell found that children believed they judged the correctness of spelling by "sounding out," but seemed to actually use visual memory of whole words and spelling patterns. Radebaugh found that the methods of poor and good spellers differed in their sophistication of spelling strategies.

Teaching strategies and spelling programs have been researched to provide varied suggestions for the methods of producing positive spelling skills. Three basics of spelling instruction which Carol and James Beers questioned were phonics validity, rate memorization validity, and spelling expertise linked with writing practice. Ganschaw explained seven instructional areas for teaching competent spelling: writing practice, error pattern analysis, developmental stages, component parts, spelling patterning, self-correction, and the morphological, syntactical, and derivational aspects of words. A spelling consciousness was felt by Gentry to be developed by providing varied unstructured opportunities to observe and use print. A balanced curriculum of spelling vocabulary, phonemic skills, and continued language arts development was stressed by Graham. Johnson, Langfor, and Quorn discussed seven factors influencing spelling: word list resources, learning system for spelling, whole unit approach to words, phonic generalizations, test-study method, and time allotment for instruction. Nicholson and Schacter found proficient spellers used three kinds of

knowledge: language knowledge, internalized rules, and visual associations. Their research presented a model for teaching or diagnosis which used these three kinds of knowledge. Geedy reviewed research which discussed time allotment for daily instruction, coordination of reading and spelling, value of word lists, criterion for word selection, and usage of spelling skills.

A review of the research concluded that spelling presented in commercial spelling programs does not assure correct spelling. Researchers cited were: Graham, Hillerich, Cronnell, Humes, DiStefano, Hagerty, and Groff. Hillerich defended his belief that the phonetics system of teaching spelling presented in commercial spelling programs should not be used, but recommended the research approach of supplying a word list, instruction on the study method, and keeping a record of student progress. Cronnell and Humes objected to spelling textbooks because of their lack of low-frequency words, repetition of content, irrelevance of the practice of instruction, and incorrect use of sequential word lists with phonics generalizations and spelling rules. High-frequency words and the number of words misspelled by students was found by DiStefano and Hagerty to not be consistent in spelling programs across grade levels, or within grade levels. Goff disputed the validity of the practice of using word frequency as a major criterion for word placement in spelling programs.

Researchers have focused on varied aspects of spelling and have designed programs based on their findings. Kamii and Randazzo presented a program using invented spelling, self-evaluation, and peer influence to construct spellings of words. Wood presented an overview of literature on invented spelling and disputed the concerns about its validity as a valuable tool for the acquisition of standard spelling. Delquadri and Greenwood designed the Peer Tutoring Spelling Game to improve spelling accuracy on the weekly tests by increasing active response opportunities for students during instruction. Doggett designed and implemented a program using the dictionary to improve students' basic spelling skills. The principles of mastery learning were used by Ley in his program to teach developmental spelling for high-frequency demon words and students' frequently misspelled words. Word Mastermind was the basis for a study conducted by Marino into the methods used by good spellers to achieve their efficiency. The values and dangers of using computers as a resource for teaching spelling was studied by Nolen. Olrich's research supported his belief that efficient productive learning of spelling evolves when the "whole person" is involved. Sentence dictation was used as a means by Scarrozzo to reinforce spelling and other written language skills. Ungaro described a visual program called imagineering used to present images for letters and words to stimulate memory.

CONCLUSION

What methods do children use to spell correctly and how does this apply to instructional approaches?

The research suggested that children basically use phonemic principles (sounding out) and visual memory of whole words to judge the correctness of their spelling. Researchers feel the basis for their spelling skill comes from sequential developmental concepts internalized by exposure to the written word and including phonics. Teachers should use error pattern analysis to diagnose individual patterns and create approaches based on phoneme-grapheme correspondence and sequential development.

What teaching methods should be used to produce effective spellers?

The research provides many suggestions which the classroom teacher can use to produce effective spellers. Research has shown that much of the content of elementary school instruction is unjustly based on commercial spelling textbooks. Teachers were advised to expand their instruction beyond the textbook, or not use it at all. Effective spelling programs were found by research to use the principles of beginning with invented spelling and continuing teaching using developmental concepts.

Phonetics was found to have its place in instruction but only as a beginning strategy that needed to be formulated with other strategies. The basic word list children learned from was researched to be best provided from children's own writing. Programs were recommended to be individually based on error-pattern analysis and the individual students' strengths, weaknesses, and needs, and organized by the test-study-test method. Research emphasized the need to expand spelling teaching programs by teaching skills in problem solving, self-correction, spelling patterns and regularities, proofreading, and dictionary usage. The emphasis on spelling should be that it is a skill learned for the convenience of all language arts with varied opportunities to use this skill in writing.

RECOMMENDATIONS

It is recommended that:

1) Students maintain an individual word list of misspelled words beginning with the first grade and continuing throughout their elementary schooling.

2) Teachers assign spelling words from researched word lists, all curriculum areas, and students daily lives', interests, and needs.

3) Students grade and correct their own spelling tests.

4) Students and teachers become trained in error pattern analysis and self-correction.

5) More emphasis be placed in the spelling curriculum on learning the skills of patterning, dictionary usage, and mnemonic devices.

6) More training of effective instructional spelling methods be made available to teachers at their academic level or during schools' in service meetings.

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